

NO.10013.S05

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WHAT IS CLAIMED IS:

1. A surface contacting member, for a toner fusing system or process, comprising:

- (a) a base; and
- (b) a surface layer comprising:
 - (i) at least one fluoroelastomer; and
 - (ii) amorphous silica surface treated with at least one organoaminosilane.

2. The surface contacting member of claim 1 comprising at least one member selected from the group consisting of a fuser member, a support member, a gloss control member, and a release agent applicator.

3. The surface contacting member of claim 2 wherein the organoaminosilane comprises at least one member selected from the group consisting of silazanes, amine functional organosilanols, and amine functional organohalosilanes.

4. The surface contacting member of claim 3 wherein the organoaminosilane comprises at least one member selected from the group consisting of

(a) silazanes selected from the group consisting of disilazanes and cyclosilazanes;

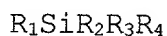
(b) amine functional organosilanols selected from the group consisting of primary, secondary, and tertiary amine functional organosilanols; and

(c) amine functional organohalosilanes selected from the group consisting of tertiary amine functional organohalosilanes.

5. The surface contacting member of claim 4 wherein the organoaminosilane comprises at least one member selected from the group consisting of

(a) silazanes selected from the group consisting of hexamethyldisilazane, 1,3-diphenyltetramethyldisilazane, 1,3-divinyl tetramethyldisilazane, heptamethyldisilazane, and 2,2,4,4,6,6-hexamethylcyclotrisilazane;

(b) amine functional organosilanols having the formula



wherein R_1 is selected from the group consisting of primary, secondary and tertiary amino group-containing C_1 - C_{10} hydrocarbyl groups;

from one to all three of R_2 , R_3 , and R_4 have the formula $-OR_5$, with the remainder being the same or different, and being selected from the group consisting of C_1 - C_8 hydrocarbyl groups and hydrogen; and

each R_5 is the same or different C_1 - C_8 hydrocarbyl group; and

(c) amine functional organohalosilanes having the formula



wherein R_6 is selected from the group consisting of tertiary amino group-containing C_1 - C_{10} hydrocarbyl groups; and

from one to all three of R_7 , R_8 , and R_9 are the same or different halogen, with the remainder also being the same or different, and being selected from the group consisting of C_1 - C_8 hydrocarbyl groups and hydrogen.

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6. The surface contacting member of claim 5 wherein the surface layer comprises from about 2 percent by volume to about 35 percent by volume of the amorphous silica surface treated with at least one organoaminosilane.

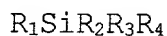
7. The surface contacting member of claim 5 wherein the organoaminosilane comprises hexamethyldisilazane.

8. The surface contacting member of claim 2 that is a fuser member.

9. The fuser member of claim 8 wherein the organoaminosilane comprises at least one member selected from the group consisting of

(a) silazanes selected from the group consisting of hexamethyldisilazane, 1,3-diphenyltetramethyldisilazane, 1,3-divinyl tetramethyldisilazane, heptamethyldisilazane, and 2,2,4,4,6,6-hexamethylcyclotrisilazane;

(b) amine functional organosilanols having the formula



wherein R_1 is selected from the group consisting of primary, secondary and tertiary amino group-containing C_1 - C_{10} hydrocarbyl groups;

from one to all three of R_2 , R_3 , and R_4 have the formula $-OR_5$, with the remainder being the same or different, and being selected from the group consisting of C_1 - C_8 hydrocarbyl groups and hydrogen; and

each R_5 is the same or different C_1 - C_8 hydrocarbyl group; and

(c) amine functional organohalosilanes having the formula



wherein R_6 is selected from the group consisting of tertiary amino group-containing C_1 - C_{10} hydrocarbyl groups; and

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10. The fuser member of claim 9 wherein the amorphous silica comprises fumed silica.

11. The fuser member of claim 9 wherein the surface layer comprises from about 2 percent by volume to about 35 percent by volume of the amorphous silica surface treated with at least one organoaminosilane.

12. The fuser member of claim 11 wherein the surface layer comprises from about 5 percent by volume to about 20 percent by volume of the amorphous silica surface treated with at least one organoaminosilane.

13. The fuser member of claim 9 wherein the organoaminosilane comprises hexamethyldisilazane.

14. The fuser member of claim 9 further comprising at least one cushion layer interposed between the base and the surface layer.

15. The fuser member of claim 9 wherein the surface layer further comprises at least one filler selected from the group consisting of SnO_2 , SiC , CuO , ZnO , Al_2O_3 , FeO , and Fe_2O_3 .

16. A composition comprising:

- (a) at least one fluoroelastomer; and
- (b) amorphous silica surface treated with at least one organoaminosilane;

17. The composition of claim 16 further comprising at least one curative.

18. The composition of claim 17 wherein the organoaminosilane comprises at least one member selected from the group consisting of

(a) silazanes selected from the group consisting of hexamethyldisilazane, 1,3-diphenyltetramethyldisilazane, 1,3-divinyl tetramethyldisilazane, heptamethyldisilazane, and 2,2,4,4,6,6-hexamethylcyclotrisilazane;

(b) amine functional organosilanols having the formula



wherein R_1 is selected from the group consisting of primary, secondary and tertiary amino group-containing C_1 - C_{10} hydrocarbyl groups;

from one to all three of R_2 , R_3 , and R_4 have the formula $-\text{OR}_5$, with the remainder being the same or different, and being selected from the group consisting of C_1 - C_8 hydrocarbyl groups and hydrogen; and

each R_5 is the same or different C_1 - C_8 hydrocarbyl group; and

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19. The composition of claim 18 further comprising at least one solvent.

20. The composition of claim 18 wherein the organoaminosilane comprises hexamethyldisilazane.

21. The composition of claim 18 wherein the curative comprises a bisphenol curing system, the bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator.

22. The composition of claim 21 further comprising at least one cocurative.

23. The composition of claim 22 wherein the at least one cocurative comprises at least one member selected from the group consisting of MgO and ZnO .

24. A process for preparing a surface contacting member coating composition, comprising providing a solution or dispersion comprising solvent, at least one fluoroelastomer,

and amorphous silica surface treated with at least one organoaminosilane, wherein the at least one fluoroelastomer and the amorphous silica surface treated with at least one organoaminosilane are dispersed throughout the solvent, and also providing that a bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator also is dispersed throughout the solvent, with the at least one bisphenol crosslinking agent and the at least one accelerator being dispersed throughout the solvent, together with the at least one fluoroelastomer and the amorphous silica surface treated with at least one organoaminosilane, at least until gels are at least essentially absent from the solution or dispersion.

25. The process of claim 24 comprising mixing under high shear the solution or dispersion comprising solvent, at least one fluoroelastomer, and amorphous silica surface treated with at least one organoaminosilane, and maintaining the solution or dispersion, having dispersed therein the bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator, at least until gels are at least essentially absent from the solution or dispersion.

26. The process of claim 25 comprising:

(a) mixing under high shear a solution or dispersion comprising:

- (i) at least one fluoroelastomer;
- (ii) amorphous silica surface treated with at least one organoaminosilane; and
- (iii) solvent

(b) adding to the solution or dispersion a bisphenol curing system comprising at least one bisphenol crosslinking agent and at least one accelerator; and

(c) mixing, without high shear, the solution or dispersion with the bisphenol curing system therein, at least until gels are at least essentially absent from the solution or dispersion.

27. The process of claim 26 wherein the organoamino-silane comprises at least one member selected from the group consisting of

(a) silazanes selected from the group consisting of hexamethyldisilazane, 1,3-diphenyltetramethyldisilazane, 1,3-divinyl tetramethyldisilazane, heptamethyldisilazane, and 2,2,4,4,6,6-hexamethylcyclotrisilazane;

(b) amine functional organosilanols having the formula



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from one to all three of R_2 , R_3 , and R_4 have the formula $-OR_5$, with the remainder being the same or different, and being selected from the group consisting of C_1 - C_8 hydrocarbyl groups and hydrogen; and

each R_5 is the same or different C_1 - C_8 hydrocarbyl group; and

(c) amine functional organohalosilanes having the formula



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wherein R_6 is selected from the group consisting of tertiary amino group-containing C_1 - C_{10} hydrocarbyl groups; and

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28. The process of claim 27 wherein the solution or dispersion further comprises at least one cocurative.

29. The process of claim 28 wherein the solution or dispersion further comprises at least one α,ω difunctional polydiorganosiloxane.